

Exhibit No. 2  
Date 4-10-07 #2**The Wolf and the Spread of Disease by N. Nazarova**Translated from the Russian *Hunting and Game Management*

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Although there has been much attention directed towards the "predator--prey" biocenosis (i.e., intertwined existence), there isn't yet a unified view of the role of the predator: some researchers are trying to prove the existence of a balance in this biocenosis and ascribe to the predator the leading role in determining the number of prey; others propose that the number of predators is relatively small and that they don't cause tangible harm to the numbers of "useful" animals as opposed to the "harmful" ones.

Many propose that the wolf limits the numbers of hooved animals (Naumov, 1933; Semyonov-Tyanshanskij, 1948, 1969; Druri, Terletskij, 1962; Markidin, 1968; Komarov, Lavrov, 1969; Kheruvimov, 1969 and others).

The existence of diametrically opposed viewpoints speaks to the complexity of the problem and its incomplete research.

Turning to the question of the role of wolves and other predators (fox, polar fox, wolverine, etc.) in the spreading of infectious diseases it should be stressed that here, too, there is incomplete research. However, there are in the literature many reports of a percentage of observed wolves being the carriers of infectious diseases (brucella, deer-fly fever, listeriosis, anthrax, and others), reports which provide a strong basis to think that the predator plays an important role in their spread. It is most likely that this highly mobile predator ranging over dozens of miles is able to spread these diseases over significant distances.

Within the last few years wolfpacks have formed, which in order to survive, have been drawn to carrion, especially to dead cattle pits where the carcasses of the dead cows have not been properly buried despite the clear directives of veterinary medicine. In such situations these wolf carrion-eaters prove to be extremely serious spreaders of infectious diseases.

The wolf has been blamed for instances of the extremely severe diseases of both domesticated animals and man -- rabies. Lupine rabies after a latent period manifests itself in extreme agitation and aggression. Within a very short time such a dangerously sick wolf can widely spread out of his area of activity. For example, there is a recorded episode of just such a spread of rabies among farm animals and people in Belarus in 1957 when a rabid wolf within just a day and a half roamed over a hundred miles, bit 25 people (19 seriously), some 50 farm animals, and who knows how many forest creatures (Lin, 1962). Similar happenings are not rare. Moreover, while recognizing the undoubtedly serious role of the wolf in the spread of the rabies virus to man, one must be cognizant of the incomplete research in the wolf's role in limiting the numbers of other carriers of this disease, namely, the fox. The most recent examples of epizootic rabies (i.e. rapidly spreading) in Europe have occurred after the wolf was long gone, in the western regions of Europe and then spreading to the east.

Research has been done both in Russia and abroad to try to explain the role of the wolf in the spread of invasive or helminthic (I.E. caused by worms) diseases. In the Soviet Union alone the wolf can be infected with more than 50 types of parasites. Among these are several dangerous ones which can be transmitted to farm animals and to people. Significant damage can be done to wild hooved animals by larval parasites such as echinococci, cysticercocci, and coenuri, all of which can attack man also. According to data from the Leningrad Oblast' during a serious flare-up of cysticercosis not one observed female moose give birth to two calves, whereas in the Murmansk Oblast' where the outbreak was three times less severe all the moose females had two calves. The same type of situation was noted by Kheruvimov in 1969 in the Tambov Oblast'. There are also reports of the deaths of female moose and female deer caused by echinococci and cysticercocci. Wolves in the wild, seriously infected with the adult stage of cysticercosis by a tapeworm of the taenia family, are the sources of this parasitic invasion. It has been noted that where there aren't any wolves, the number of cysticercosis infected wild hooved animals is much less (Peterson, 1955). According to our data those wolves seriously infected with tapeworms (the source of larval parasites in feral hooved animals and in man) are found where their main food supply is hooved animals. In the Nenets Autonomous Region (Nazarov, Belaev, 1975) all observed wolves were seriously infected with tapeworms and four out of five had widespread echinococci. In the Belovezhsk Forest from 1957 to 1962 all eight wolves who underwent autopsies were found to be infected with tapeworm types of parasites harmful to both animals and people.

Together with the sufficiently negative influence of the wolf on its biocenosis by means of its spreading of infectious diseases to both animals and people, there are also not so rare data pointing out the elimination by the wolf-predator of sickly prey. In all likelihood, such sickly prey are the source of the diseases for healthy animals who get infected through the actions of the wolf. Most likely, both sides have a point in this matter. However, up to now neither side has evaluated the problem from an economic point of view. Moreover, in the report on the wolf (Dr. Mech) the culling-out role of the wolf was strongly emphasized, whereas its negative influence on nature as a spreader of disease was not discussed.

What's been said here leads us to the conclusion that deeper research on the wolf's epizootic role in the ecosystem is necessary, research which is free from pre-conceived notions (common in the past) and based on modern methodology.

That there is a need for stringent regulation of the wolf population in the USSR there can be no doubt.